

As discussed during the personal interview, the four-dimensional histogram is composed of cells and each cell corresponds to a value or range of values for each of the four dimensions.¹ The cells themselves track the frequency of occurrence of the value or range of values corresponding to the values or range of values assigned to the cell.² Thus, for example, a histogram cell corresponding to *A* for the x-position, *B* for the y-position, *C* for the x-velocity and *D* for the y-velocity would have a value of 1 for the first occurrence of a track with these values, a value of 2 for the second occurrence of a track with these values, etc. As the track moves through the video images the track will cause other cells to accumulate frequency of occupation values, depending upon the position and velocity of the track.

As also discussed during the personal interview, the general concept of four-dimensional histograms with cells that accumulate frequency of occurrence values is well known to those skilled in the art, as evidenced the article “Visual Recognition of Emotional States” by Schwerdt et al. (“Schwerdt”), cited to reject claims in a previous Office Action.

Because one skilled in the art would have understood how the claimed four-dimensional histogram and histogram cells are constructed, it is respectfully submitted that claims 1, 2, 4-6 and 8-15 are definite, and withdrawal of this rejection is respectfully requested.

¹ See, for example, page 12, lines 4-13 of the present application describing adjusting cell size to adjust the data storage requirement for the histogram.

² See, for example, claim 1 “a comparison of the frequency of occupation of a histogram cell representing a corresponding position and velocity”.

The Office Action includes the following obviousness rejections under 35 U.S.C. § 103(a):

- Claims 1, 2, 8-12, 14 and 15 in view of the combination of the article “Application of the Self-Organising Map to Trajectory Classification” by Owens et al. (“Owens 2000”) and the article “Novelty Detection in Video Surveillance Using Hierarchical Neural Networks” by Owens et al. (“Owens 2002”);
- Claim 13 in view of the combination of Owens 2000, Owens 2002 and U.S. Patent No. 4,198,653 to Kamin (“Kamin”);
- Claim 4 in view of the combination of Owens 2000, Owens 2002, and U.S. Patent No. 6,411,328 to Franke et al. (“Franke”);
- Claim 5 in view of the combination of Owens 2000, Owens 2002 and U.S. Patent No. 5,546,474 to Zuniga (“Zuniga”); and
- Claim 6 is rejected for obviousness under 35 U.S.C. § 103(a) in view of the combination of Owens 2000, Owens 2002 and U.S. Patent No. 7,058,205 to Jepson et al. (“Jepson”).

Applicants respectfully traverse these rejections on the basis that the various combinations do not disclose or suggest:

1. accumulating data representing the behavior of the tracks in a ***four-dimensional histogram***; and
2. classifying a track according to a comparison of the ***frequency of occupation of a histogram cell*** with an occupancy threshold.

These rejections are based on the premise that although Owens 2000 does not disclose the use of a four-dimensional histogram and histogram cells, the two layer neural network of Owens 2000 is equivalent to these claimed features.

Owens 2000 discloses that each element of a feature vector is input into a respective unit of a self-organizing map in order to identify a “winning neuron” and then the Euclidean distance between the feature vector and the winning neuron’s exemplar vector is compared to a threshold value to determine if this

distance exceeds a threshold value.³ In contrast, Applicants' claims involve comparing the *frequency of occupation* of histogram cells with a threshold, and not comparing a Euclidean distance with a threshold.

A Euclidean distance between a feature vector and a winning neuron in a self-organizing map is not equivalent to a frequency of occupation of a histogram cell. Although the present application discloses that a neural network can be used instead of a four-dimensional histogram⁴, there is nothing in the record indicating that this was known in the prior art. As such, there is no evidence of record that the neural network of Owens 2000 is an equivalent of the claimed four-dimensional histogram.

Owens 2002 is cited solely for the disclosure of generating an alarm, but like Owens 2000, does not render obvious the claimed use of a four-dimensional histogram and frequency of occupation of a histogram cell. Accordingly, the rejection of claims 1 and 15 should be withdrawn.

Claims 2, 4-6 and 8-14 are patentably distinguishable over the current grounds of rejection at least by virtue of their dependency. Accordingly, the obviousness rejections of claims 1, 2, 4-6 and 8-15 should be withdrawn.

If there are any questions regarding this response or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

³ Page 6.

⁴ Pages 14 and 15.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket # 038819.55861US).

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Respectfully submitted,

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